

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

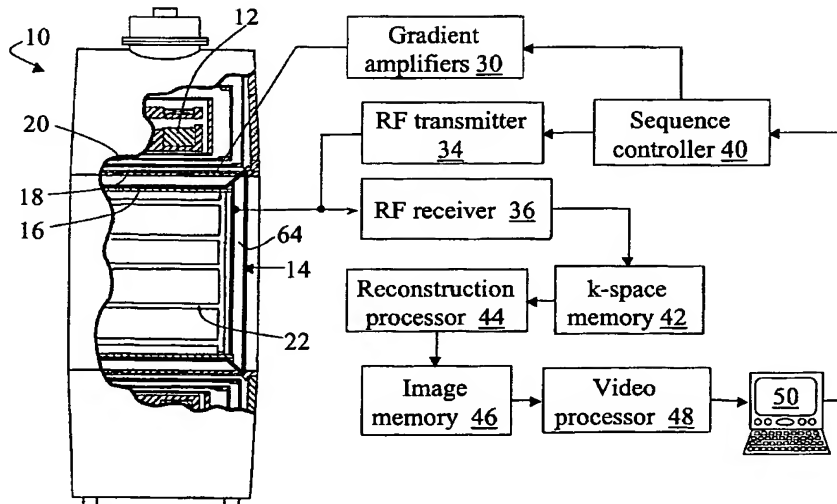
(19) World Intellectual Property
Organization
International Bureau(43) International Publication Date
3 June 2004 (03.06.2004)

PCT

(10) International Publication Number
WO 2004/046745 A1

- (51) International Patent Classification⁷: **G01R 33/421**
- (21) International Application Number:
PCT/IB2003/004802
- (22) International Filing Date: 29 October 2003 (29.10.2003)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
60/427,969 20 November 2002 (20.11.2002) US
- (71) Applicant (for all designated States except US): **KONINKLIJKE PHILIPS ELECTRONICS N.V.** [NL/NL]; Groenewoudseweg 1, NL-5621 BA Eindhoven (NL).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): **SHVARTSMAN, Shmaryu, M.** [US/US]; 595 Miner Road, Cleveland, OH 44143 (US). **MORICH, Michael, A.** [US/US]; 595 Miner Road, Cleveland, OH 44143 (US). **DEMEESTER, Gordon, D.** [US/US]; 595 Miner Road, Cleveland, OH 44143 (US).
- (74) Common Representative: **KONINKLIJKE PHILIPS ELECTRONICS N.V.**; c/o LUNDIN, Thomas, M., 595 Miner Road, Cleveland, OH 44143 (US).
- (81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).
- Published:
— with international search report
- For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: SELF-SHIELDED GRADIENT FIELD COIL FOR MAGNETIC RESONANCE IMAGING



(57) Abstract: A gradient coil for a magnetic resonance imaging apparatus (10) includes a primary coil (16) defining an inner cylindrical surface (60), and shield coil (18) or coils defining a coaxial outer cylindrical surface (62). Coil jumps (74) connect the primary and shield coils (16, 18). The coil jumps (74) define a non-planar current-sharing surface (64) extending between inner and outer contours (66, 68) that coincide with the inner and outer cylindrical surfaces (60, 62), respectively. The coil (16, 18, 74) defines a current path that passes across the current sharing surface (64) between the inner and outer contours (66, 68) a plurality of times. Optionally, some primary coil turns (70) are electrically interconnected to define an isolated primary sub coil (P2) that together with a second shield (S2, S2', S2'') enables a discretely or continuously selectable field of view.